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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/670,689

09/25/2003

David Kurt Neumann

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EXAMINER

STAFFORD, PATRICK

ART UNIT

PAPER NUMBER

2828

MAIL DATE

DELIVERY MODE

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

Application No.

10/670,689

Applicant(s)

NEUMANN ET AL.

Examiner

Patrick Stafford

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 25 September 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_.

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## **DETAILED ACTION**

### ***Double Patenting***

A rejection based on double patenting of the "same invention" type finds its support in the language of 35 U.S.C. 101 which states that "whoever invents or discovers any new and useful process ... may obtain a patent therefor ..." (Emphasis added). Thus, the term "same invention," in this context, means an invention drawn to identical subject matter. See *Miller v. Eagle Mfg. Co.*, 151 U.S. 186 (1894); *In re Ockert*, 245 F.2d 467, 114 USPQ 330 (CCPA 1957); and *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970).

A statutory type (35 U.S.C. 101) double patenting rejection can be overcome by canceling or amending the conflicting claims so they are no longer coextensive in scope. The filing of a terminal disclaimer cannot overcome a double patenting rejection based upon 35 U.S.C. 101.

Claims 1, 2, 4, 6-8, 13-14, 16-20 are rejected under 35 U.S.C. 101 as claiming the same invention as that of claims 1, 7, 8, 3, 2, 14, 10, 12, 14, 15, 19 and 3 of prior U.S. Patent No. 6,658,038. This is a double patenting rejection.

### ***Priority***

Claims 3, 5, 9-12 and 15 are not disclosed in the application 10/198,594. Therefore, the priority of 10/198,594 is not granted to these claims.

### ***Claim Objections***

Claim 10 is objected to because of the following informalities: Claim 10 depends on claim 10. Examiner has interpreted claim 10 being dependent on claim 1 for purposes of applying prior art. Appropriate correction is required.

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***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-2, 4, 6, 8-13, 16-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over McDermott (U.S. Patent 5,417,928, hereafter '928) in view of Hughes (U.S. Patent 4,074,203, hereafter '203).

Claim 1: '928 teaches an optical oxygen laser, comprising:

a source of oxygen (col. 2, lines 45-48);  
a cryoreactor having an input connected to the source of oxygen (col. 2, lines 52-55); and  
an optical resonator cavity receiving the excited state oxygen and having a laser output (col. 2, lines 66-68).

It does not explicitly teach an optical pump coupled to the cryoreactor and exciting the source of oxygen to form an excited state oxygen. However, '203 teaches a laser system producing singlet oxygen (col. 4, lines 3-8) employing an optical pump to excite the source of oxygen (col. 4, lines 11-15) in order to transmit the laser wavelength. Therefore, it would have been obvious to one of ordinary skill in that art at the time the invention was made to use an optical pump to excite the source of oxygen in order to transmit the laser wavelength.

Claim 2: '928 and '203 teach the laser of claim 1. '928 teaches the source of oxygen is a liquid oxygen (col. 2, lines 44-45).

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Claim 4: '928 and '203 teach the laser of claim 1. '928 teaches the source of oxygen is inherently pressurized (col. 2, lines 44-45).

Claim 6: '928 and '203 teach the laser of claim 1. '203 teaches the optical pump source is a diode array.

Claim 8: '928 and '203 teach the laser of claim 6. '203 teaches the diode array is bathed in the source of oxygen (col. 4, lines 3-15).

Claim 9: '928 and '203 teach the laser of claim 1. '928 teaches the cryoreactor (col. 2, lines 59-61) includes an intake manifold (col. 2, lines 59-60), a waveguide (col. 2, lines 48-52) and an exhaust manifold (col. 2, lines 66-68).

Claim 10: '928 and '203 teach the laser of claim 1. '928 teaches the waveguide has an optical input (col. 5, lines 53-56).

Claim 11: '928 and '203 teach the laser of claim 10. '928 teaches an exhaust pipe coupled to the exhaust manifold (col. 5, lines 50-53 and Fig. 10, part 26 coupled to part 24).

Claim 12: '928 and '203 teach the laser of claim 10. '928 teaches a pressure in the exhaust pipe is less than a pressure of the source of oxygen (col. 2, lines 59-64).

Claim 13: '928 teaches a method of operating an optical oxygen laser, comprising the steps of:

placing the excited state of oxygen in an optical resonant cavity having a laser output (col. 2, lines 66-68); and

exhausting a decayed state of oxygen from the optical resonant cavity (col. 3, lines 17-20).

It does not explicitly teach the step of illuminating a volume of oxygen with an optical pump source in a reactor to form an excited state of oxygen. However, '203 teaches a laser

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system producing singlet oxygen (col. 4, lines 3-8) comprising the step of illuminating a volume of oxygen with an optical pump source in a reactor to form an excited state of oxygen (col. 4, lines 11-15) in order to transmit the laser wavelength. Therefore, it would have been obvious to one of ordinary skill in that art at the time the invention was made to use an optical pump to excite the source of oxygen in order to transmit the laser wavelength.

Claim 16: '928 and '203 teach the method of claim 13. '928 teaches step (a) further includes the step of:

al) cooling the optical pump with a source of oxygen (col. 2, lines 44-45).

Claim 17: '928 teaches an optical oxygen laser, comprising:

a reactor coupled to a source oxygen (col. 2, lines 52-55), the reactor combining a volume of oxygen from the source of oxygen (col. 5, lines 50-56); and

an optical resonant cavity receiving the excited state of oxygen and having a laser output (col. 2, lines 59-61).

It does not explicitly teach an optical pump to combine with a volume of oxygen.

However, '203 teaches a laser system producing singlet oxygen (col. 4, lines 3-8) employing an optical pump to combine with a source of oxygen (col. 4, lines 11-15) in order to transmit the laser wavelength. Therefore, it would have been obvious to one of ordinary skill in that art at the time the invention was made to use an optical pump to combine with a volume of oxygen in order to transmit the laser wavelength.

Claim 18: '928 and '203 teach the laser of claim 17. '928 teaches the reactor has a waveguide where the light and the volume of oxygen are combined (col. 2, lines 48-56).

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Claim 19: '928 and '203 teach the laser of claim 18. '928 teaches a pair of mirrors are placed at each end of the waveguide (col. 5, lines 50-56 and Fig. 10, part 23 "waveguide" and part 29, "mirrors").

Claim 20: '928 and '203 teach the laser of claim 17. '928 teaches the optical pump source is a diode array (col. 4, lines 11-15).

Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over McDermott (U.S. Patent 5,417,928, hereafter '928) in view of Hughes (U.S. Patent 4,074,203, hereafter '203) and further in view of Lynch et al (U.S. Patent 5,836,173, hereafter '173).

'928 and '203 teach the laser of claim 1. They do not explicitly teach the source of oxygen is a supercritical oxygen. However, '173 teaches the use of supercritical oxygen (col. 4, lines 37-47) in order to use oxygen as a cryogenic fluid (col. 5, lines 9-12). Therefore, it would have been obvious to one of ordinary skill in that art at the time the invention was made to use supercritical oxygen in order to use oxygen as a cryogenic fluid.

Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over McDermott (U.S. Patent 5,417,928, hereafter '928) in view of Hughes (U.S. Patent 4,074,203, hereafter '203) and further in view of Rockenfeller (U.S. Patent 4,461,756, hereafter '756).

'928 and '203 teach the laser of claim 1. They do not explicitly teach the source of oxygen has a pressure between two and ninety atmospheres. However, '756 teaches a singlet oxygen generating laser with a source of oxygen pressurized between two and ninety atmospheres (col. 6, lines 51-55) in order to generate the highest yield. Therefore, it would have

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been obvious to one of ordinary skill in that art at the time the invention was made to use a singlet oxygen generating laser with a source of oxygen pressurized between two and ninety atmospheres in order to generate the highest yield.

Claim 7, 14-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over McDermott (U.S. Patent 5,417,928, hereafter '928) in view of Hughes (U.S. Patent 4,074,203, hereafter '203) and further in view of Stone (U.S. Patent 4,523,315, hereafter '315).

Claim 7: '928 and '203 teach the laser of claim 6. It does not explicitly teach the diode array is coupled through an optical element to an optical fiber. However, '315 teaches a laser system producing singlet oxygen (col. 2, lines 13-18) with an optical fiber coupled to the laser source through an optical element (col. 2, lines 51-55) in order to achieve higher powers. Therefore, it would have been obvious to one of ordinary skill in that art at the time the invention was made to have a laser system producing singlet oxygen with an optical fiber coupled to the laser source through an optical element in order to achieve higher powers.

Claim 14: '928 and '203 teach the method of claim 13. They do not explicitly teach the step of (a) includes the step of powering a ytterbium doped fiber laser. However, '315 teaches a laser system producing singlet oxygen (col. 2, lines 13-18) using a ytterbium doped fiber laser to illuminate the volume of oxygen (col. 3, lines 13-18) in order to achieve higher powers.

Therefore, it would have been obvious to one of ordinary skill in that art at the time the invention was made to use a ytterbium doped fiber laser to illuminate the volume of oxygen in order to achieve higher powers.



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Claim 15: '928 and '203 teach the method of claim 13. They do not explicitly teach the step of (a) includes the step of powering a ytterbium doped fiber laser. However, '315 teaches a laser system producing singlet oxygen (col. 2, lines 13-18) powering a Raman fiber laser to illuminate the volume of oxygen (col. 3, lines 13-15) in order to achieve higher powers. Therefore, it would have been obvious to one of ordinary skill in that art at the time the invention was made to power a Raman fiber laser to illuminate the volume of oxygen in order to achieve higher powers.

### *Conclusion*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Patrick Stafford whose telephone number is (571) 270-1275. The examiner can normally be reached on M-Th 7:30-5 EST.

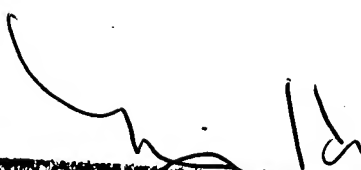
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, MinSun Harvey can be reached on (571) 272-1835. The fax, phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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**MINSUN OH HARVEY  
PRIMARY EXAMINER**